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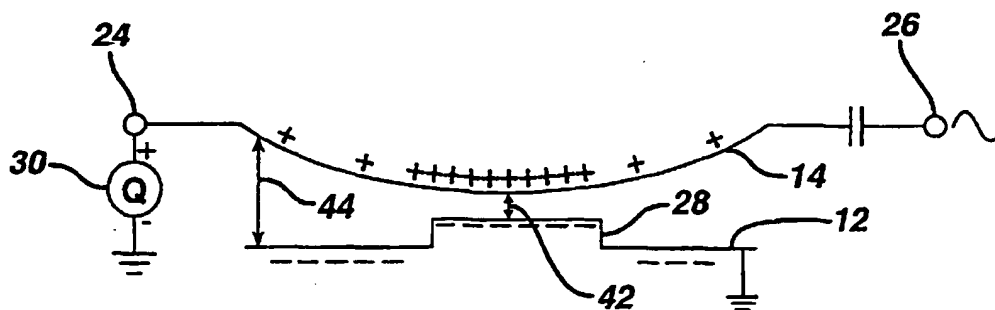
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(54) Title: CAPACITIVE MICROMACHINED ULTRASONIC TRANSDUCERS



(57) Abstract: An ultrasonic transducer is formed by a plurality of cMUT cells (10), each comprising a charged diaphragm plate (14) capacitively opposing an oppositely charged base plate (12). The diaphragm plate (14) is distended toward the base plate (12) by a bias charge. The base plate (12) includes a central portion (28) elevated toward the center of the diaphragm plate (14) to cause the charge of the cell to be of maximum density at the moving center of the diaphragm plate (14). For harmonic operation the drive pulses applied to the cells (10) are predistorted in consideration of the nonlinear operation of the device to reduce contamination of the transmit signal at the harmonic band. The cMUT cells (10) can be fabricated by conventional semiconductor processes and hence integrated with ancillary transducer circuitry such as a bias charge regulator (30). The cMUT cells (10) can also be fabricated by micro-stereolithography whereby the cells (10) can be formed using a variety of polymers and other materials.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B06B H04R G01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 542 001 A (REIFFIN MARTIN) 30 July 1996 (1996-07-30) column 3, line 45 -column 4, line 34 figures 1-8	1,3-8
Y	US 5 619 476 A (HALLER MATTHEW I ET AL) 8 April 1997 (1997-04-08) column 3, line 28 - line 55 column 5, line 35 -column 6, line 18 figures 1,2,6-8 claim 1	1,3-8
A	US 5 533 134 A (TOKURA KUNIHICO ET AL) 2 July 1996 (1996-07-02) column 4, line 62 -column 5, line 27 figure 3	2,3,5,7, 8
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 5 436 452 A (KENNY THOMAS W ET AL) 25 July 1995 (1995-07-25) column 8, line 28 - line 59 column 9, line 24 - line 50 column 10, line 13 - line 26 figures 3-5,9</p> <p>-----</p>	4,5,7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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